

8/916629

PTO 06-3033

Japanese Kokai Patent Application
No. Sho 58[1983]-196280

ELECTROCONDUCTIVE PASTE AND PART CONNECTING METHOD.

Takashi Tanabe

UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. MARCH 2006
TRANSLATED BY THE MCELROY TRANSLATION COMPANY

JAPANESE PATENT OFFICE
PATENT JOURNAL (A)
KOKAI PATENT APPLICATION NO. SHO 58[1983]-196280

Int. Cl.³: C 09 J 3/14
Sequence No. for Office Use: 7102-4J
Filing No.: Sho 57[1982]-79583
Filing Date: May 12, 1982
Publication Date: November 15, 1983
No. of Inventions: 2 (Total of 3 pages)
Examination Request: Not filed

ELECTROCONDUCTIVE PASTE AND PART CONNECTING METHOD

[Dodensei pesuto oyobi buhin sessoku hoho]

Inventor: Takashi Tanabe

Applicant: TDK Corporation

[There are no amendments to this patent.]

Claims

1. An electroconductive paste, characterized by the fact that an anaerobic adhesive component and an electroconductive component are included.
2. The electroconductive paste of Claim 1, characterized by the fact that the above-mentioned anaerobic adhesive component is mainly composed of an acrylic or methacrylic resin.
3. The electroconductive paste of Claim 2, characterized by the fact that the above-mentioned anaerobic adhesive component includes at least one kind selected from a group comprised of epoxy acrylate, urethane acrylate, polyester acrylate, acrylic monomer, acrylic

oligomer, methacrylic monomer, and methacrylic oligomer modified by the above-mentioned acrylic or methacrylic resin.

4. A part connecting method, characterized by the fact that using an electroconductive paste containing an anaerobic adhesive component and an electroconductive component, a part is connected to a conductor on a substrate while securing an electric conductivity.

Detailed explanation of the invention

The present invention pertains to an electroconductive paste, which is suitable for the connection of a part such as a chip-shaped electronic component that is required to be mounted on a substrate while securing an electric conductivity, and a part connecting method using the electroconductive paste.

For example, in case a part such as chip-shaped capacitor is mounted on a printed-circuit board, as shown in Figure 1, the lower surface of a part 1 and a printed-circuit board 2 have been temporarily locked with a temporary lock adhesive 3, and end electrodes 4 and 5 of the part 1 have been soldered in conductor patterns 6 and 7 on the printed-circuit board 2. As the above-mentioned temporary lock adhesive 3, an anaerobic adhesive is used to prevent a characteristic change of the part 1 by the degradation of time, etc. However, in the conventional example, as preprocesses for soldering the end electrodes 4 and 5 of the part 1 on the printed-circuit board 2, since a spreading process of the adhesive 3 for temporarily locking the part 1, an adhering process of the part 1 to the temporary lock adhesive 3, etc., are required, the number of processes is large, and the work efficiency is poor.

As another conventional mounting method, a method that prints and spreads a thermosetting electroconductive adhesive at prescribed positions of the conductor patterns 6 and 7 of the printed-circuit board 2 and connects the end electrodes 4 and 5 of the part to the conductor patterns 6 and 7 by the electroconductive adhesive is also known. According to this conventional method, the end electrodes 4 and 5 can be conducted and connected to the conductor patterns 6 and 7 without passing through the temporary lock adhering process. However, as the electroconductive adhesive, since the thermosetting type such as epoxy group is used, the thermosetting time of about 1 h is required under a temperature condition of 100-150°C, the energy loss is large, and a long time is required for the treatment.

The present invention removes the above-mentioned conventional drawbacks, and its purpose is to provide an electroconductive paste, which is cured in a short time of about several tens seconds at normal temperature, does not require a temporary adhering process for connecting and fixing a part to a substrate while securing an electric conduction, and can connect and fix the part in a short time at normal temperature, and a part connecting method.

In order to achieve the above-mentioned purpose, the electroconductive paste of the present invention is characterized by the fact that an anaerobic adhesive component and an electroconductive component are included.

The above-mentioned anaerobic adhesive component is mainly composed of an acrylic or methacrylic resin and has a composition containing one kind or a mixture of two kinds or more selected from a group comprised of epoxy acrylate, urethane acrylate, polyester acrylate, acrylic monomer, acrylic oligomer, methacrylic monomer, and methacrylic oligomer modified by the acrylic or methacrylic resin.

The above-mentioned electroconductive component can be widely used as long as it is a powder-shaped substance having an electric conductivity. More specifically, Ag, Ni, Pb, etc., can be mentioned.

A curing agent to the above-mentioned anaerobic adhesive may be added from the beginning or may also be added during the use by separately preparing it in microcapsule shape, etc., or a two-liquid shape in which the electroconductive component and the curing agent are divided into two may also be adopted. Furthermore, as viscosity regulating and adhesive agents, thermoplastic polymers can also be added.

The electroconductive paste with this composition is an anaerobic electroconductive adhesive having an electric conductivity that is cured in a short time of about several tens seconds at normal temperature. Therefore, in case a part such as chip-shaped capacitor is connected to printed-circuit board, etc., as shown in Figure 2, an electroconductive paste 8 of the present invention is spread on the conductor patterns 6 and 7 of the printed-circuit board 2 by a means such as screen printing, and the part 1 is placed on said electroconductive paste 8 so that the end electrodes 4 and 5 may be positioned, so that the part 1 is fixed onto the printed-circuit board 2 and the end electrodes 4 and 5 can be conducted and connected to the conductor patterns 6 and 7. For this reason, the temporary adhering process required in the prior art is not required at all, and the mounting work process of the part 1 on the substrate 2 is shortened. Furthermore, since the electroconductive paste is cured in a short time of about several tens seconds at normal temperature, the energy loss in the part connection is considerably reduced, compared with the prior art, and the connection treatment time is considerably shortened, so that the work efficiency is improved.

As mentioned above, since the electroconductive paste of the present invention includes an anaerobic adhesive and an electroconductive component, the electroconductive paste, which is cured in a short time of about several tens seconds at normal temperature, does not require a temporary adhering process for connecting and fixing a part to a substrate while securing an electric conduction, and can connect and fix the part in a short time of about several tens seconds at normal temperature, and a part connecting method can be provided.

Brief description of the figures

Figure 1 shows a conventional part connecting method, and Figure 2 shows the part connecting method of the present invention.

- 1 Part
- 2 Substrate
- 8 Electroconductive paste

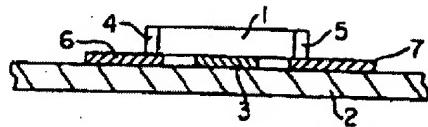


Figure 1

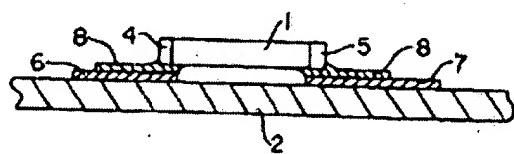


Figure 2